

Cleaner cotton production in South Africa

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ABSTRACT

The Cleaner Textile Project South Africa is an initiative by the South African Government, Dept. of Environment and Tourism (DEAT) and Department of Trade and Industry (DTI), and the Department of Water Affairs together with DARUDEEC, to promote cleaner production of cotton in South Africa. The activities of the project on the cotton production side include production of organic cotton and no-till crop establishment. The occurrence of insects is discussed.

Introduction

The Danish International Development Assistance (DANIDA) started a project in South Africa, aimed at reducing environmental pollution caused by the production and processing of cotton. This paper deals with the production of cotton. Over the years since 1975 a large number of scientific and popular articles, emphasizing the importance of natural enemies and scouting of the crop, have appeared in both scientific journals and the local farming press.

Strategy

A strategy was formulated to reduce the use of chemicals. For this reason attempts were made to grow cotton organically, while at the same time devoting considerable energy to promoting the philosophy of Integrated Pest Management (IPM) among growers most of which had a long history of dependence on chemical applications to solve pest problems. Growers could conveniently be divided into small scale and large-scale commercial producers. Dependence on chemicals is a characteristic of both groups. In addition a number of projects were funded and initiated at the University of Pretoria specifically to review the literature on non-chemical means of cotton insect control and the effect of transgenic cotton containing the Bt gene, on the fauna of the environment in and near cotton fields. The literature review is available for publication and the environmental study has not been completed at this stage of the growing season.

Organic trials

In the first season (2000–2001), trials were planted on the Makhathini Flats in KwaZulu-Natal, the Loskop irrigation scheme in Mpumalanga and at Weipe on the northern frontier. In view of the time available, all chemicals were withheld from these plantings to see if there would be any crop at all at the end of the season.

In the second season the KwaZulu plot was abandoned due to drought conditions. The Loskop trial was

planted but abandoned due to neglect and the Weipe trial plot was continued. The latter was sprayed twice with an organic formulation of *Bacillus thuringiensis*.

The third season (2002–2003) only the plot at Weipe was planted. It was preceded by a vetch crop that was incorporated into the soil to provide nitrogen for the cotton since deficiency symptoms were obvious in the previous crops.

Results

According to Table 1, it appears possible to produce organic cotton at a return of about R 3000 per ha profit in a high input irrigated situation. In the rain-fed cotton areas of South Africa, the yields are generally much lower and organic production would necessitate access to large hectares to make organic and any other commercial production viable.

Promotion of IPM among commercial farmers

A number of activities were initiated to enable and encourage growers to implement Integrated Pest Management in their production process:

1. A commercial scouting service was planned and six check scouts were trained at the Cotton Training Centre in Zimbabwe. An entrepreneur was recruited and the intention was that he would deploy the scouts on farms to scout cotton fields for a fee. The scheme never started because the cotton hectares declined to a level too low to be viable. The check scouts are being used to scout commercial cotton in the major production areas and to assist from time to time with the training courses.
2. Representatives from both the commercial and small scale farming sectors were taken on a study tour of organic cotton production areas in Turkey and areas in Denmark where cleaner production of other crops and also animals was demonstrated. Leaders of the farming community were included with the intention that they lend their support and influence in order to extend the IPM principles.
3. Study groups involving growers were maintained and attempts were made to establish more groups. Study group lectures dealt with the total cotton production process with emphasis on IPM principles of pest control.
4. Training courses were held in all the major areas to train farm scouts. Farmers were invited to attend lectures at least on the final day to enable them to manage their scouts effectively.
5. Small-scale growers attended training courses in their areas. The finer details are the subject of a talk given elsewhere during this Conference.
6. The information on cotton production according to IPM principles- was disseminated -through various farming magazines, e.g. the Cotton SA newsletter, New Farmer and the Farmers' Monthly magazine.

Marketing

The obvious requirement of a suitable market specializing in organic cotton was soon realized and accordingly a market study was initiated. This study is underway under the leadership of an international specialist and the results are not yet available.

Practical constraints facing cotton growers

1. Irrigated cotton is considered to be "high input" cotton and sacrifices in income cannot be afforded either by way of increased input costs or lower yields at this stage. Insect control cost is less than the cost of defoliant and growth regulators and is far less than the major items like irrigation and labor.
2. Buyers of lint have yet to be persuaded to pay a premium for organic cotton.

3. There is a strong swing towards production of genetically modified (GM) cotton and although the contractual requirement of 5% unsprayed cotton where GM cotton is grown, was thought to create an opportunity for organic production, the possibility no longer exists due to the requirement of 800 m isolation between organic and GM cotton.
4. High input costs and land values necessitate continued high return production and a transition period to go over to organic production is not feasible unless the grower is subsidized in the interim.

References

- Myers, D. and Stolton, S. (Eds.) (1999). Organic Cotton. Intermediate Technology Publications, Ltd. ISBN 1 85339 464 5.

Table 1. The economic performance of organic cotton grown at different sites during the duration of the project.

Item	Loskop	KZN	Weipe
Harvest year	2001	2001	2001
Yield/ha (kg)	3200	514	1570
Output	9600	1388	4710
Variable cost (Rand)			
Seed	182	145	60
Fertilizer	-	-	-
Pesticides	-	-	29
Herbicides	-	-	-
Tractor spray	-	-	15
Irrigation	840	-	1320
Labor			
Pre-harvest	2700	600	507
Harvest	1216	206	549
Land prep.	300	300	300
Other costs	-	-	-
Total variable	5238	1251	2780
Gross margin	4362	137	1930
Conventional	5508	1631	5040